

In the Claims:

Please cancel claims 5, 6, 11 and 12.

Please amend claims 1 and 7 as follows.

Please add new claims 13-20.

1. (Currently Amended) A read head for use with an interconnect transmission line having a characteristic impedance of Z_0 , the read head comprising:

a tunnel valve device, the tunnel valve device having a device resistance R_T corresponding to a predetermined resistance-area (RA) product; and

a shunt resistance R_S connected in parallel across the tunnel valve device, a value of the shunt resistance being based on the parallel combination of R_T and R_S substantially equaling a predetermined selected value of resistance, wherein the shunt resistance R_S is located on a substrate/slider for the read head.

2. (Original) The read head according to claim 1, wherein the predetermined selected value of resistance substantially equaling the characteristic impedance Z_0 of the interconnect transmission line.

3. (Original) The read head according to claim 1, wherein the predetermined resistance-area (RA) product is about equal to at least about 10 Ohms- μm^2 .

4. (Original) The read head according to claim 1, wherein the predetermined resistance-area (RA) product is about equal to a value of a resistance-area (RA) product in which a Tunnel Magneto-Resistance (TMR) ratio $\Delta R/R_0$ for the tunnel valve device does not substantially increase for further increase in the value of the resistance-area (RA) product.

5. (Cancelled)

6. (Cancelled)

7. (Currently Amended) A disk drive, comprising:
an interconnect transmission line having a characteristic impedance of Z_0 ;
and

a read head having a tunnel valve device and a shunt resistance R_S , the tunnel valve device having a device resistance R_T corresponding to a predetermined resistance-area (RA) product; the shunt resistance R_S being connected in parallel across the tunnel valve device, and a value of the shunt resistance being based on the parallel combination of R_T and R_S substantially equaling a predetermined selected value of resistance, wherein the shunt resistance R_S is located on a substrate/slider for the read head.

8. (Original) The disk drive according to claim 7, wherein the predetermined selected value of resistance substantially equaling the characteristic impedance Z_0 of the interconnect transmission line.

9. (Original) The disk drive according to claim 7, wherein the predetermined resistance-area (RA) product is about equal to at least about 10 Ohms- μm^2 .

10. (Original) The disk drive according to claim 7, wherein the predetermined resistance-area (RA) product is about equal to a value of a resistance-area (RA) product in which a Tunnel Magneto-Resistance (TMR) ratio $\Delta R/R_0$ for the tunnel valve device does not substantially increase for further increase in the value of the resistance-area (RA) product.

11. (Cancelled)

12. (Cancelled)

13. (New) A read head for use with an interconnect transmission line having a characteristic impedance of Z_0 , the read head comprising:
a tunnel valve device, the tunnel valve device having a device resistance R_T corresponding to a predetermined resistance-area (RA) product; and
a shunt resistance R_S connected in parallel across the tunnel valve device, a value of the shunt resistance being based on the parallel combination of R_T and R_S substantially equaling a predetermined selected value of resistance, wherein the shunt resistance R_S is located at an arm electronics module associated with the read head.

14. (New) The read head according to claim 13, wherein the predetermined selected value of resistance substantially equaling the characteristic impedance Z_0 of the interconnect transmission line.

15. (New) The read head according to claim 13, wherein the predetermined resistance-area (RA) product is about equal to at least about 10 Ohms- μm^2 .

16. (New) The read head according to claim 13, wherein the predetermined resistance-area (RA) product is about equal to a value of a resistance-area (RA) product in which a Tunnel Magneto-Resistance (TMR) ratio $\Delta R/R_0$ for the tunnel valve device does not substantially increase for further increase in the value of the resistance-area (RA) product.

17. (New) A disk drive, comprising:
an interconnect transmission line having a characteristic impedance of Z_0 ; and
a read head having a tunnel valve device and a shunt resistance R_S , the tunnel valve device having a device resistance R_T corresponding to a predetermined resistance-area (RA) product; the shunt resistance R_S being connected in parallel across the tunnel valve device, and a value of the shunt

resistance being based on the parallel combination of R_T and R_S substantially equaling a predetermined selected value of resistance, wherein the shunt resistance R_S is located at an arm electronics module associated with the read head.

18. (New) The disk drive according to claim 17, wherein the predetermined selected value of resistance substantially equaling the characteristic impedance Z_0 of the interconnect transmission line.

19. (New) The disk drive according to claim 17, wherein the predetermined resistance-area (RA) product is about equal to at least about 10 Ohms- μm^2 .

20. (New) The disk drive according to claim 17, wherein the predetermined resistance-area (RA) product is about equal to a value of a resistance-area (RA) product in which a Tunnel Magneto-Resistance (TMR) ratio $\Delta R/R_0$ for the tunnel valve device does not substantially increase for further increase in the value of the resistance-area (RA) product.